

wherein the web travels supported by a transfer belt impervious to water during at least one treatment step prior to said first dryer cylinder.

48. The method of claim 47, wherein a web treatment substance is applied to a side of the web during at least one treatment step prior to the first dryer cylinder and the web is arranged to travel supported by a transfer belt so that the side of the web to which the treatment substance is applied is facing the transfer belt, whereby the treatment substance is pressed by the transfer belt onto the web.

49. The method of claim 47, further comprising calendering at least one side of the web against a transfer belt.

50. The method of claim 47, wherein the web is subjected to a surface treatment while its solids content is in the range of 10 to 60%.

51. The method of claim 47, wherein water is removed from the web in at least one step by pressing the web with the help of an endless felt against the transfer belt by a press element.

52. The method of claim 48, wherein water is removed from the web in at least one step by pressing the web with the help of an endless felt against the transfer belt by a press element.

53. The method of claim 49, wherein water is removed from the web in at least one step by pressing the web with the help of an endless felt against the transfer belt by a press element.

54. The method of claim 51, wherein the web is pressed by a felt against the transfer belt in a shoe press.

55. The method of claim 51, wherein the web is pressed by a felt by pressing it against a transfer belt by a roll.

56. The method of claim 47, wherein water is removed from the web by a noncontacting dryer prior to the first dryer cylinder.

57. The method of claim 47, wherein the web is conveyed, at least when it is dewatered, under pressing in continuous contact with at least one endless support element.

58. The method of claim 57, wherein the endless support element comprises one of a wire, a felt and a transfer belt.

59. The method of claim 47, wherein the web treatment substance is applied to the surface of the transfer belt by one of a film-transfer applicator device, a spray applicator, a jet applicator, and a short-dwell applicator, whereby the treatment substance is applied to the web as a film which travels on the surface of the transfer belt.

60. The method of claim 48, wherein the web treatment substance is applied to the surface of the transfer belt by one of a film-transfer applicator device, a spray applicator, a jet applicator, and a short-dwell applicator, whereby the treatment substance is applied to the web as a film which travels on the surface of the transfer belt.

61. The method of claim 47, wherein the web treatment substance is applied in at least one step directly to the web surface by a spray applicator.

62. The method of claim 57, wherein the web treatment substance is applied in at least one step directly to the web surface by a spray applicator.

63. The method according to claim 47, wherein the web treatment substance is applied directly into a nip formed between the transfer belt and the web.

64. The method according to claim 57, wherein the web treatment substance is applied directly into a nip formed between the transfer belt and the web.

65. The method of claim 47, wherein the web treatment substance is applied to the transfer belt.

66. The method of claim 65, wherein the web treatment substance is further applied directly to the web in an amount so as to form a pond substantially where the web and the transfer belt contact.

67. The method of claim 63, wherein the web treatment substance is applied to the transfer belt.

68. The method of claim 67, wherein the web treatment substance is further applied directly to the web in an amount so as to form a pond substantially where the web and the transfer belt contact.

69. The method of claim 47, wherein the web is treated in a calibrating press prior to passing the web to the first dryer cylinder.

70. The method of claim 69, wherein the transfer belt is passes through a nip of the calibrating press.

71. The method of claim 69, wherein the web is treated in a calibrating press having a nip formed by two rolls, wherein the treatment substance is applied to one roll of the calibrating press by an applicator device and the treatment substance is subsequently transferred from the surface of the roll to the web.

72. The method of claim 70, wherein the web is treated in a calibrating press having a nip formed by two rolls, wherein the treatment substance is applied to one roll of the

calibrating press by an applicator device and the treatment substance is subsequently transferred from the surface of the roll to the web.

73. The method of claim 70, wherein the web is treated in a calibrating press having a nip formed by two rolls and a belt running about one of said rolls, wherein the treatment substance is applied to the surface of the belt of the calibrating press by an applicator device and the treatment substance is subsequently transferred from the surface of the belt to the web.

74. The method according to claim 70, wherein the web is treated in a calibrating press having a nip formed by a roll and a shoe roll having a belt running about the roll, wherein the treatment substance is applied to a surface of the belt of the calibrating press by an applicator device and the treatment substance is subsequently transferred from the surface of the belt to the web.

75. The method of claim 48, wherein the web is passes through a nip formed by two transfer belts pressable against each other, wherein the treatment substance is applied to the surfaces of both belts and the treatment substance is subsequently transferred to both surfaces of the web.

76. The method of claim 47, wherein the web is supported at least partially during dewatering by one of a felt, a belt, a roll, a cylinder, an air blow support means, and a vacuum support means.

77. The method of claim 47, wherein the web is dried after application of the treatment substance during the first treatment step by means of a noncontacting dryer.

78. The method of claim 77, wherein the noncontacting dryer comprises one of a radiant heat dryer and an air-impingement dryer.

79. The method of claim 56, wherein the web is dried after application of the treatment substance during the first treatment step by means of a noncontacting dryer.

80. The method of claim 57, wherein the web is dried after application of the treatment substance during the first treatment step by means of a noncontacting dryer.

81. The method of claim 59, wherein the web is dried after application of the treatment substance during the first treatment step by means of a noncontacting dryer.

82. The method of claim 61, wherein the web is dried after application of the treatment substance during the first treatment step by means of a noncontacting dryer.

83. The method of claim 63, wherein the web is dried after application of the treatment substance during the first treatment step by means of a noncontacting dryer.

84. The method of claim 65, wherein the web is dried after application of the treatment substance during the first treatment step by means of a noncontacting dryer.

85. The method of claim 76, wherein the web is dried after application of the treatment substance during the first treatment step by means of a noncontacting dryer.

86. The method of claim 47, wherein at least two layers of treatment substance are applied at least to one side of the web during at least two separate web treatment steps.

87. The method of claim 59, wherein at least two layers of treatment substance are applied at least to one side of the web during at least two separate web treatment steps.

88. The method of claim 61, wherein at least two layers of treatment substance are applied at least to one side of the web during at least two separate web treatment steps.

89. The method of claim 63, wherein at least two layers of treatment substance are applied at least to one side of the web during at least two separate web treatment steps.

90. The method of claim 65, wherein at least two layers of treatment substance are applied at least to one side of the web during at least two separate web treatment steps.

91. The method of claim 69, wherein at least two layers of treatment substance are applied at least to one side of the web during at least two separate web treatment steps.

92. The method of claim 76, wherein at least two layers of treatment substance are applied at least to one side of the web during at least two separate web treatment steps.

93. The method of claim 47, wherein at least one layer of a web treatment substance is applied to the web by means of a film-transfer roll.

94. The method of claim 59, wherein at least one layer of a web treatment substance is applied to the web by means of a film-transfer roll.

95. The method of claim 86, wherein at least one layer of a web treatment substance is applied to the web by means of a film-transfer roll.

96. The method of claim 47, wherein the web treatment substance comprises one of surface size and coating mix in the form of one of a liquid, a dispersion, an emulsion and a foam.

97. The method of claim 47, wherein the web is pressed against a roll by a transfer belt.

98. An apparatus for a paper- or board-making machine comprising:
a wire section for forming a moving web of paper or board;
a dryer means for removing water from the web by pressing;

at least one dryer cylinder for drying the web;

at least one surface treatment device for treating the surface of the web prior to the first dryer cylinder; and

at least one transfer belt that is impervious to water and that forms an endless loop against which the web is arranged to travel while the surface of the web is treated by the surface treatment device.

99. The apparatus of claim 98, further comprising a means for applying a treatment substance to the web surface facing a transfer belt in a manner that causes the applied substance to be pressed into the web by said belt.

100. The apparatus of claim 98, wherein at least one of the surface treatment devices is a calender.

101. The apparatus of claim 99, wherein at least one of the surface treatment devices is a calender.

102. The apparatus of claim 98, further comprising:
a felt positioned to travel against said transfer belt so that the web to be treated is passed between the felt and the transfer belt; and

at least one pressing means for pressing the felt against the transfer belt for removing water from the web by pressing.

103. The apparatus of claim 102, wherein said pressing means is a shoe press.

104. The apparatus of claim 102, wherein said pressing means is a roll.

105. The apparatus of claim 99, further comprising at least one noncontacting dryer means used for drying the web prior to the first dryer cylinder.

106. The apparatus of claim 98, wherein said wire section comprises a web-forming wire, and further comprising at least one felt, wire and belt, and a means for picking the web off the web-forming wire of said wire section and passing the web supported by the at least one felt, wire and belt to a next belt, felt or wire.

107. The apparatus of claim 106, further comprising a wire passing about said dryer cylinder, and a means for picking the web off said transfer belt and passing the web at least partially supported by said wire to said dryer cylinder.

108. The apparatus of claim 107, further comprising at least one felt and at least one transfer belt positioned to pass the web in a continuously supported manner and in continuous connection with said transfer belt through said dryer means.

109. The apparatus of claim 98, further comprising a means for applying a web treatment substance to a surface of the transfer belt.

110. The apparatus of claim 109, wherein said means for applying a web treatment substance to a surface of the transfer belt comprises one of a film-transfer applicator, a spray applicator, a jet applicator, and a short-dwell applicator device.

111. The apparatus of claim 98, further comprising at least one spray applicator device located proximate the dryer means for applying a web treatment substance to one of the web, and a nip formed by the web and the transfer belt.

112. The apparatus of claim 98, further comprising a calibrating press located in front of said dryer cylinder.

113. The apparatus of claim 98, further comprising a calender through which the web is adapted to pass prior to passing to said dryer cylinder.

114. The apparatus of claim 112, wherein said transfer belt passes through the calibrating press.

115. The apparatus of claim 114, further comprising a roll located on the exterior side of said transfer belt of the calibrating press, and a means for applying a web treatment substance on said roll located on the exterior side of the endless-loop transfer belt of the calibrating press.

116. The apparatus of claim 112, further comprising a belt positioned to pass as an endless loop over said roll located on the exterior side of said transfer belt, and a means for applying a web treatment substance on the surface of said belt positioned to pass over said roll located on the exterior side of said transfer belt.

117. The apparatus of claim 114, further comprising a belt positioned to pass as an endless loop over said roll located on the exterior side of said transfer belt, and a means for applying a web treatment substance on the surface of said belt positioned to pass over said roll located on the exterior side of said transfer belt.

118. The apparatus of claim 116, wherein said calibrating press comprises a shoe press.

119. The apparatus of claim 117, wherein said calibrating press comprises a shoe press.

120. The apparatus of claim 98, further comprising:
at least two transfer belts positioned to move at least a portion of their travel opposed to each other so that the web is passed therebetween;
a means for applying a web treatment substance to the surfaces of said transfer belts;
and
a means for pressing said transfer belts against each other for setting up an application pressure.

121. The apparatus of claim 98, further comprising at least one noncontacting dryer to dry the web after the application of the web treatment substance.

122. The apparatus of claim 109, further comprising at least one noncontacting dryer to dry the web after the application of the web treatment substance.

123. The apparatus of claim 111, further comprising at least one noncontacting dryer to dry the web after the application of the web treatment substance.

124. The apparatus of claim 115, further comprising at least one noncontacting dryer to dry the web after the application of the web treatment substance.

125. The apparatus of claim 120, further comprising at least one noncontacting dryer to dry the web after the application of the web treatment substance.

126. The apparatus of claim 98, further comprising at least one film-transfer roll for applying a web treatment substance to the web surface.


127. The apparatus of claim 98, further comprising a roll and wherein at least one transfer belt is positioned to pass over said roll such that the web is pressed by the transfer belt against the roll.

REMARKS

This preliminary amendment is presented to place the application in proper form for examination and to eliminate multiple dependency from the present claims. No new matter has been added. Early examination and favorable consideration of the above-identified application is earnestly solicited.

Any additional fees or charges required at this time in connection with the application may be charged to our Patent and Trademark Office Deposit Account No. 03-2412.

Respectfully submitted,
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